Organization and system theories in interprofessional research: A scoping review

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Abstract

In recent years, there has been an increasing impetus to define and develop theoretical foundations for interprofessional research. Currently, the theories cited in such research have often focused on individual and group learning. By comparison, organization and systems theories (OST) enable consideration of system and organization level factors. A scoping review was conducted to explore the use of OST in interprofessional research published between 2013-2019. Thirty-two studies were included and 13 OST were identified. Activity theory and complexity theory were the most commonly used OST. OST are relatively well integrated into data analysis and reporting of research findings, with less consideration given to how OST can support research designs. A primary reason researchers cited for selecting OST was that such theories could best reflect the complexity of interprofessional activities. OST provide a mechanism for understanding the nuances and multifactorial issues impacting interprofessional research. OST can thus address some of the challenges of introducing and sustaining interprofessional initiatives and should be further utilized within interprofessional research.

Keywords: interprofessional, organization and system theories, scoping review

Background

Interprofessional collaboration (IPC) among healthcare practitioners is an important, though complex endeavour, influenced by socio-political factors and overt as well as covert rules for teamwork (Irajpour & Alavi, 2015). Interprofessional education (IPE) for students and practitioners, seen as fundamental to eventual IPC, faces similar challenges (Varpio, Aschenbrener, & Bates, 2017). Consequently, genuine implementation of IPC is an ongoing challenge (Fenwick, 2014). However, the potential for IPC to address many of the healthcare issues of the 21st century is widely accepted (Patel & Reeves, 2018). This has given rise to exponential growth in the volume of interprofessional research, which includes research focusing on IPC among practitioners, as well as IPE activities for students and practitioners. For example, Reeves, Palaganas, and Zierler (2017) identified eight new reviews of IPE, published between 2009-2014 and covering a span of 400 primary research papers. However, a recurring critique of interprofessional research has been that it is '*descriptive, anecdotal, and atheoretical'* (Clark, 2006, p.578).

There are likely many factors contributing to the limited application of theory in the interprofessional literature. Hean, Craddock, and Hammick (2012) noted that a lack of guiding principles for theory selection was a likely factor in the dearth of theoretically informed interprofessional research. Additionally, there may be a perception among practitioners and educators that theory is the property of academics and dissonant from clinical practice (Reeves & Hean, 2013). Notwithstanding the challenges of applying theory in interprofessional research, there is general agreement that well-rationalised use of theory when designing and analysing research supports in-depth understanding of interprofessional working and learning (Lorenc et al., 2012). Authentic use of carefully selected theory is necessary if we seek to meaningfully develop IPC and avoid *'just a tweaking around the*

edges of what we are now doing' (Sargeant, 2009, p.178). Moreover, theory can lead us to question taken for granted assumptions regarding IPC and IPE and to better understand what is happening beyond the surface (Hean et al., 2018). Additionally, using an appropriate theoretical lens can support transfer of findings to a wide range of contexts (Reeves & Hean, 2013). Consequently, there have been deliberate moves to increase the theoretical underpinnings of interprofessional research.

Theories relating to how adults learn generally, or in groups, have proved relatively popular within interprofessional research (Reeves et al., 2016). For instance, principles of adult learning theory, such as problem-based learning, have been widely used in the design of IPE activities (Reeves et al., 2016). Cornes et al. (2014) utilised Wenger's Communities of Practice theory in relation to frontline interprofessional homelessness services. However, a limitation of such theories is that their focus does not extend beyond the individuals or groups involved, a limitation given previously acknowledged contextual factors influencing interprofessionalism. As Fenwick (2012) notes, such a perspective implies that successful IPC and IPE merely requires people learning to get along, without consideration of the relevant social, historical and political factors. In reality, interprofessionalism is influenced by multiple healthcare and education system factors, such as organizational hierarchies and resource availability (Green, 2013). This has led to consideration of theories with a focus on the overall organization or system within which interprofessional research is conducted. Organizational or systems theories (OST) are underpinned by an acknowledgement that an organization or system is more than the sum of its individual parts, with actions at any one level having predictable and less predictable effects on other levels (Reeves et al., 2007). This reflects a post-structuralist perspective that recognizes the complexity of interactions between individuals and their environment (Mann, 2011). McMurtry, Rohse, and Kilgour (2016) have

highlighted the benefits of OST as a means of situating interprofessionalism in relation to the dynamic context of learning and cultural influences.

Suter et al. (2013) conducted a scoping review which explicitly considered the use of OST in interprofessional research. From a comprehensive search, they identified a suite of nine OST that have previously been used in the field. These nine theories included: organizational learning (Argyris & Schön, 1978), presage–process–product (Biggs, 1993), complexity theory (Cooper, Braye, & Geyer, 2004), institutional theory (DiMaggio & Powell, 1983), activity theory (Engestrom, Engestrom, & Vahaao, 1999), punctuated equilibrium theory (Gersick, 1991), chaos theory (Krippner, 1994), learning organization (Senge, 1990), and systems theory (Von Bertalanffy, 1971). They also concluded that greater use could be made of OST to better understand interprofessional processes. To this end they identified eight OST with potential use in interprofessional research: behavioral theory of the firm (Cyert & March, 1963), stakeholder theory (Freeman, 1984), differentiation–integration theory (Lawrence & Lorsch, 1967), unfreeze-change-refreeze theory (Lewin, 1951), implementation theory (Montjoy & O'Tool, 1979), socio-technical theory (Trist & Bamforth, 1951), diffusion of innovation theory (Rogers, 1962) and contingency theory (Woodward, 1965). Six years have elapsed since the publication of Suter et al. (2013) and during this period the body of literature involving interprofessional research has continued to develop (Reeves et al., 2017), with the selection and application of theories an ongoing topic of interest. Hean et al. (2018) recently reiterated that OST can support advancement within the field by providing sophisticated theoretical underpinnings for IPC and IPE. Moreover, Hean et al. (2018) also noted that how theories are used within research papers is given limited consideration. Therefore, the aims of this review were threefold:

1. To provide an update on which OST have been used in interprofessional literature since 2013.

2. To review the application of OST in interprofessional literature.
3. To identify what OST have added to the interprofessional literature.

Method

A scoping review methodology was used as this allowed for relatively comprehensive mapping of the available evidence in relation to the use of OST in interprofessional research (Joanna Briggs Institute, 2015). The scoping review guidelines designed by Arksey and O'Malley (2005) informed the process of this scoping review. Reporting in this review was also informed by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Extension for Scoping Reviews (Tricco et al., 2018) (Supplementary Material, Appendix A).

Inclusion criteria

- Empirical research published in English language, peer-reviewed journals from 2013-2019.
- Research with a primary focus on interprofessional collaboration (IPC) or interprofessional education (IPE), involving student or qualified professional participants.
- Use of an organizational or systems theory, as defined by Suter et al. (2013, p.58): *'The basic premise of systems theory is that organizations consist of multiple, interdependent parts that collectively form more than the sum of their parts. . . . In essence, organizational theory focuses on the holistic examination of organizations, i.e. the study of organizations from multiple viewpoints, using multiple methods and levels of analysis.'*

Search strategy

A specialist subject librarian and the search terms used by Suter et al. (2013) were consulted to develop a comprehensive search string (Supplementary Material, Appendix B). In the interests of comprehensiveness we did not limit the search to studies using theories named by

Suter et al. (2013). Rather, through our initial search we sought to identify any studies using theories that met the definition of OST provided in the inclusion criteria. We then conducted an additional search for the theories named by Suter et al. (2013) to reflect our aim of updating that review. Research databases CINAHL, psycINFO, Scopus, Education Source, ERIC and Medline were searched. Web of Science was accessed to facilitate forward citation tracking of seminal articles. Key journals were hand searched, including: Journal of Interprofessional Care, Advances in Health Sciences Education and Journal of Interprofessional Education and Practice.

Screening of studies

Title and abstract screening were guided by the inclusion criteria. The PRISMA flow diagram was used to record the screening process (Figure 1) (Moher, Liberati, Tetzlaff, & Altman, 2009). Blind title and abstract screening and full text review was completed for all papers by the first and second authors.

Six hundred and eighty five articles were identified using the search strategy. Following title and abstract screening, 644 articles were excluded. Forty-one full text articles were assessed for eligibility. Nine articles were excluded. Exclusion was due to one of the following reasons: the paper did not have an interprofessional focus, it was not an empirical peer-reviewed paper or the full text was not obtainable despite contacting authors. Thirty-two articles were included in this scoping review (see Figure 1).

<<Insert Figure 1 here >>

Data extraction and quality appraisal

A data extraction table was developed using Microsoft Excel to summarize key information from each paper. The Crowe Critical Appraisal Tool (CCAT) was used for the purposes of quality appraisal of individual studies (Crowe, 2013a). Using this tool, eight key areas of studies were rated, on a six point scale from 0-5. A total score out of 40 was calculated for each study, which was then converted into a percentage score (Crowe, 2013b). Quality appraisal is not an essential feature of scoping reviews (Joanna Briggs Institute, 2015) and CCAT scores were not used to determine article inclusion or exclusion. However, the information from this tool provided a helpful overview of the quality of research in the area (Arbour-Nicitopoulos et al., 2018). The first author completed quality appraisal for all papers included in the review (n=32). The second author completed quality appraisal of 30% of papers (n=10). Quality appraisal scores were compared across categories. In cases where there was a divergence of greater than five marks (n=4), papers were discussed and consensus on final rating was reached between the first and second author. These discussions then informed appraisal of the remaining papers by the first author.

Data analysis

A detailed appraisal of how OST were used in each study was also conducted, as the second aim of this review was to consider the application of OST. As noted by Campbell et al. (2014), there is little guidance regarding how to appraise the use of theory in research. The theory review process used by Bonell et al. (2013) informed this section regarding features of theory use to consider. These authors devised a list of headings relevant to the theories under consideration which were adapted for the current review as follows: clarity of explanation of the theory, rationale for use of the theory, use of the theory in study design and use of the theory in study analysis. Papers were imported into NVivo 12 to facilitate this process.

Information relating to theory was also analysed thematically to explore if there were patterns in application across studies and to identify how OST contributed to studies. Colour coding was used to highlight terms that were relevant to how and why OST were used in the different studies. As the third aim related to establishing what OST added to the included studies thematic analysis was further employed. This process was informed by the guidelines of Braun and Clarke (2006) and carried out using NVivo 12. Initially, coding was conducted whereby descriptive codes were developed from close reading of the included studies. Coding was theory driven insofar as we were coding in relation to the specific research aim of interest. Consequently, coding was focused on the aspects of studies which related to this aim. Codes were then summarised into categories and from these categories themes were developed. For example, categories referring to OST in relation to conflict, resistance and barriers to IPC and IPE formed the basis for a theme about OST addressing interprofessional challenges. These methods enabled summaries of trends and themes to be drawn across studies (Whittemore & Knafl, 2005).

Results

Study characteristics

A summary of the 32 studies included in this review is contained in Supplementary Material (Table 1). Twenty-eight studies were qualitative studies. Three studies utilised mixed qualitative and quantitative methods. One study used quantitative methods. Studies were conducted in the UK (n=8), Australia (n=5), Canada (n=5), Finland (n=3), Belgium (n=2), USA (n=2), Denmark (n=1), Hong Kong (n=1), Italy (n=1), Malta (n=1), Netherlands (n=1), New Zealand (n=1) and Singapore (n=1).

Twenty-one studies primarily involved IPC among qualified professionals in the workplace (Applequist, Miller-Day, Cronholm, Gabbay, & Bowen, 2017; Barrow, McKimm, Gasquoine, & Rowe, 2015; Bergman-Pyykkönen, 2017; Bostock, Lynch, Newlands, & Forrester, 2018; Bunniss & Kelly, 2013; Burm et al., 2019; Buttigieg, Cassar, & Scully, 2013; Casimiro, Hall, Kuziemsky, O'Connor, & Varpio, 2015; Clemins, Brant, Kersten, Mullette, & Dickerson, 2016; de Bock, Willems, & Weinstein, 2018; Gilardi, Guglielmetti, & Pravettoni, 2014; Kallio et al., 2016; McDougall, Goldszmidt, Kinsella, Smith, & Lingard, 2016; Messenger, 2013; Meyer & Lees, 2013; Misfeldt, Suter, Oelke, & Hepp, 2018; Pless, Van Hootegem, & Dessers, 2018; Pype, Mertens, Helewaut, & Krystallidou, 2018; Solomon & Risdon, 2014; Teodorczuk, Mukaetova-Ladinska, Corbett, & Welfare, 2015; Vestergaard & Nørgaard, 2018). Workplace studies were conducted in acute, primary-care or disability settings and sought to explore/improve the IPC of healthcare teams in these settings. Ten studies focused on IPE with students (Anderson, Smith, & Hammick, 2016; Anderson, Ford, & Thorpe, 2019; Bluteau, Clouder, & Cureton, 2017; Brewer, Flavell & Jordon, 2017; Ganotice & Chan, 2019; Jorm et al., 2016; Kent et al., 2016; Liaw, Zhou, Lau, Siau, & Chan, 2014; O'Keefe & Ward, 2018; Teräs, 2016). These studies involved a range of educational approaches such as online learning modules, classroom-based IPE and practice-based

placements. One study involved a mixture of student and professional IPE (Brewer, 2016), via an interprofessional conference.

Quality appraisal

With reference to quality appraisal, CCAT scores ranged from 63-100% in terms of overall study quality (Supplementary Material, Appendix C). In summary, studies were of relatively good quality, with limited reporting on research design and sampling among lower scoring areas.

Overview of OST used in studies

Within the 32 studies included in the final synthesis, 13 distinct OST were used. First, we report on the theories identified by Suter et al. (2013). Activity theory was used in ten studies (Anderson et al., 2019; Barrow et al., 2015; Bergman-Pyykkönen, 2017; Bunniss & Kelly, 2013; Casimiro et al., 2015; Kent et al., 2016; Meyer & Lees, 2013; O'Keefe & Ward 2018; Teodorczuk et al., 2015; Teräs 2016). Complexity theory/science was used in six studies (Buttigieg et al., 2013; Clemins et al., 2016; de Bock et al., 2018; Jorm et al., 2016; Pype et al., 2018; Solomon & Risdon, 2014). Presage-process-product theory was used in four studies (Anderson et al., 2016; Brewer et al., 2017; Ganotice & Chan, 2019; Liaw et al., 2014). Stakeholder theory (Applequist et al., 2017; Vestergaard & Nørgaard, 2018) and diffusion of innovation theory (Brewer, 2016; Bostock et al., 2018) were each used twice. Each remaining theory from those identified by Suter et al. (2013) was only used once: organizational theory (Messenger, 2013) and socio-technical theory (Pless et al., 2018).

Five OST identified by Suter et al. (2013) as having applicability to interprofessional research were not found: behavioural theory of the firm, contingency theory, unfreeze-change-refreeze theory, differentiation-integration theory and implementation theory. Four theories that had

been applied during the previous review were not found: chaos theory, institutional theory, learning organization and punctuated equilibrium theory. Six eligible theories not mentioned by Suter et al. (2013) were identified: ecological systems theory (Bluteau et al., 2017), actor network theory (Burm et al., 2019; McDougall et al., 2016), distributed cognitive theory (Gilardi et al., 2014), network theory (Kallio et al., 2016), socio-cultural theory (Messenger, 2013) and socioecological theory (Misfeldt et al., 2018).

Application of OST within studies

An overview of theory application is provided in Supplementary Material (Appendix D). In 22/32 studies, researchers explained their application of theory in enough detail for the reader to understand the key principles of the theory. For example, Brewer (2016) provided a succinct overview of the key principles of diffusion of innovation theory in the introduction, illustrating principles with examples. Contrastingly, Bunniss and Kelly (2013, p.1198) merely stated "*later sections discuss our findings within the theoretical framework of activity theory . . . particularly on the concept of 'knot-working' as a useful illustration of how staff members improvise strategically to negotiate everyday challenges in the health care activity system".* In such instances prior knowledge of features of theory such as 'knot-working' were assumed.

In 21/32 studies there was a clear justification regarding the OST chosen. Authors such as Brewer (2016, p.34) explained why the theory they selected was suitable for their research. An illustrative example of this was the sentence "*as IPE is still viewed by many as an innovation in health education, Rogers' 'diffusion of innovation' was selected to inform our strategy"*. Bluteau et al. (2017) referenced activity theory, actor network theory and complexity theory, prior to justifying their choice of ecological systems theory. In contrast to this approach, Casimiro et al. (2015, p.56) simply stated that their research *'was anchored in the premises of activity theory . . . a rich approach to understanding the complexities of collaboration in the clinical context from a socio-cultural perspective'.* This explanation lacked a clear rationale for why this theory was suitable for the specific research in question.

When information was compared across studies, there appeared to be recurring reasons informing decisions as to which OST to use. For instance, authors regularly made explicit reference to the complex nature of healthcare organizations when justifying theory selection. For example, Jorm et al. (2016, p.2) stated that '*healthcare itself can be understood as a complex adaptive system at many levels . . . complexity theory has special relevance'.* Some authors also explicitly referred to the need for consideration of factors beyond the individual in interprofessional research. For example, Teodorczuk et al. (2015, p.746) stated that *'applying cultural historical activity theory . . . new approaches to practice are proposed. . . . these approaches go beyond individual level to include . . . learning at team and macro levels'.*

In terms of methodology, 19/32 studies used theory to inform their research design. For example, Vestergaard and Nørgaard (2018) used the principles of stakeholder theory to inform their focus group interview schedule. Jorm et al. (2016, p.3) also explained how each of the key principles of complexity theory informed the design of their interprofessional educational activity, stating *'the educational design was underpinned by the three key*

components of complexity theory; diversity, self-organization and emergence', later noting that *'the notion of emergent products in complexity theory guided the design of the summative assessment' (*Jorm et al., 2016, p.3). Contrastingly consideration of how their chosen theory could inform the research design was not evidenced in other studies such as Misfeldt et al. (2018, p.29) '*the interview schedules included open-ended questions on the challenges that teams faced and their strategies for resolving these issues'.*

Descriptions in 31/32 studies showed how OST were used to inform data analysis and findings, with varying degrees of depth and integration. Authors reported that OST provided nuanced means of viewing findings of interprofessional research, by taking account of human and non-human interactions and acknowledging the impact of tools and technology. For example, in a study of emergency department admission procedures, distributed cognition theory was used to facilitate consideration of how the computer check-in programme impacted triagist-doctor interactions, '*to overcome the perceived limitations of the artefact, some triagists developed an alternative, informal, synchronous information channel to prevent the disappearance of certain potentially relevant details'* (Gilardi et al., 2014, p.1303). Similarly actor network theory highlighted how fluid retention (a non-human factor) impacts interprofessional management of patients with heart failure (HF) *'fluid's ability to create tensions in collaborative HF care was further illustrated in the frequent negotiations over competing framings for fluid. . . . Cardiologists prescribe diuretics for fluid management as a matter of fact, but this framing constitutes a matter of concern for nephrologists focused on caring for the kidney'* (McDougall, 2016, p.112). Non-human factors can thus have a significant impact on the implementation and success of IPC '*What emerged was a pervasive influence of the non-human on collaboration. Through a combination of misalignments between scheduling, workload, electronic and paper records . . . healthcare providers consistently struggled to engage in meaningful collaborative dialogue'* (Burm et al., 2019,

p.160). Burm et al. (2019) concluded that staff members exerted human agency to compensate for these shortcomings, cautioning that this approach may lead to staff burnout over time if organizational learning did not occur to support IPC.

OST were also used to unpick and address interprofessional challenges. For example, within activity theory, consideration of socio-historical contexts supported understanding of the stance of professional groups in relation to IPC '*participants reflected on historical policy and organisational influences affecting their collaborative practice, helping them understand why their practice had developed as it had'* (Meyer & Lees, 2013, p.677). Contradictions within a system were viewed as opportunities for creating momentum for change '*within the theoretical perspective of activity theory, it can be argued that the most troublesome challenges in relation to implementing IPL could be embraced as contradictions that may lead to change'* (O'Keefe & Ward, 2018). Similarly, McDougall et al. (2016, p.115) used the term collaborative entanglement to outline an alternative way of viewing professional differences '*collaborative entanglement is marked by team members' recognition that other disciplines frame materials differently. . . . such recognition underpins the possibility of collaboration evident in our data*'. OST also provided a vehicle for explaining why interprofessional initiatives may or may not have been effective *'The socioecological model. . . . allows for a multi-sectoral approach to identify the factors that facilitate team-based care or conversely, the factors that are causing issues for the teams on the ground'* (Misfeldt et al., 2018, p.32).

In addition to being used retrospectively, OST were also used prospectively during the planning of interprofessional initiatives. Presage-process-product theory was used to inform design of an IPE project *'Central to the model is the relationship of the sequence of three activities: presage, process, and outcome*' (Ganotice & Chan, 2019, p.212). Stakeholder theory allowed for consideration of a range of stakeholder perspectives that were important to

311 the uptake of interprofessional initiatives *'viewing the results . . . through the lens of*

312 *stakeholder theory provides added insight into the reasons why certain messages were*

313 *perceived as most effective in securing buy-in' (*Applequist et al., 2017, p.917).

Discussion

OST have been suggested as a suite of theories which support more contextually situated understandings of IPC and IPE. Therefore this review aimed to identify which OST are being used in interprofessional research, how they are applied and what they add to the interprofessional knowledge base.

Overall the findings of the current scoping review indicate that since the review of Suter et al. (2013), there has been a greater range of OST integrated into interprofessional research. We identified 32 studies in a six year period. While we only found evidence of three of the eight potential OST identified by Suter et al. (2013), we identified six OST not referenced in the original review. OST use has also increased in the latter half of the six year period of this review. Ten studies were published between 2013-2015, while 22 papers were published from 2016-April 2019.

Within the current review, activity theory and complexity theory were the most commonly used theories in interprofessional research. One potential explanation may be that researcher choice of OST is influenced by the epistemological origins of OST and whether researchers are already familiar with these epistemologies. For example, activity theory has its roots in socio-cultural theory, which focuses on how society affects individuals (Frambach, Driessen, & van der Vleuten, 2014). Healthcare and educational professionals are typically reasonably familiar with social models such as the social model of disability (Burchardt, 2004). Thus, OST with socio-cultural roots may have an intuitive resonance with those involved in interprofessional research.

It is also useful to consider visibility of specific OST within interprofessional research. Theories with a history of use in the field are more likely to be found in the literature (Hean et al., 2012). In this vein, it may be less likely that OST with business or manufacturing origins will be found in healthcare or education literature. Consequently, interprofessional researchers in healthcare may have less exposure to such OST and therefore are less likely to consider them when conducting research or designing interprofessional initiatives. Complexity theory provides a good example of how this can be addressed. Despite originating in mathematical sciences, complexity theory has been the subject of a series of publications since the early 2000's seeking to illustrate its transferability to healthcare research (Fraser & Greenhalgh, 2001; McMurtry & Paré, 2008; Greenhalgh & Papoutsi, 2018). Thompson, Fazio, Kustra, Patrick and Stanley (2016) reported an upward trend in terms of healthcare research informed by complexity theory. Therefore, guidance and examples on how to apply less familiar OST to interprofessional research may be beneficial.

However, we do need to remain cognisant of 'goodness of fit' of OST to interprofessional research. It may be that some OST are better suited than others to addressing the issues pertinent to interprofessional research. Recall that we identified three of the eight potential OST identified by Suter et al. (2013) in interprofessional research (stakeholder theory, diffusion of innovation and socio-technical theory). It may be that such OST are more suited to interprofessional research, where interprofessional relationships are often a primary focus of concern (Hall, Weaver, & Grassau, 2013). We did not find evidence of five OST recommended by Suter et al. (2013); behavioural theory of the firm, contingency theory, differentiation-integration theory, unfreeze-change-refreeze theory and implementation theory. These five theories primarily originated in business-related research. However, Hall et al. (2013) suggests that interprofessional research requires flexible and creative application of

a range of diverse theories, given the *'complexity of interprofessionalism, healthcare and human systems'* (p.79). Therefore, as IPC and IPE continue to evolve, there may be benefits to having a wider pool of OST to choose from, to eloquently address ever more nuanced and complex research questions (Hean et al., 2012). The key consideration should be the ability of the chosen theory to address the research question.

In addition to looking at the nature of OST in use, this review also considered how OST are used within studies. From the current review, authors explain and justify their choice of OST reasonably well. Less consideration appears to be given to the actual application of OST to inform research design, beyond introductory acknowledgement of theory. While most studies considered the principles of their chosen OST during data analysis and reporting, the degree to which theory informed this aspect was highly variable. It may be the case that in writing within word count restrictions, references to OST are curtailed in favour of describing research methods or reporting primary findings and recommendations. However, as a result, theory application can appear fragmented within a study and lack integration into the overall research. Therefore, the following working principal is recommended. When OST, or indeed any theories, are selected, information as to how the theories informed the study rationale, research design and analysis should be provided. Therefore, the OST would be integrated into key aspects of the research and meaningfully inform the research process and outcomes, and ideally enhance both the rigor of future research and the development of theory in this field.

Finally, the papers included in this review demonstrated that OST have much to offer interprofessional scholarship. IPC and IPE occur in dynamic and open systems, with multiple human agents and non-human factors at play. These papers highlighted the impact of external and non-human factors on IPC, such as technological tools. Greenhalgh and Papoutsi (2018)

argue that understanding the interactions between individuals involved in IPC and external and non-human factors should be considered an essential consideration by those planning interprofessional initiatives. OST can provide a lens through which to spotlight these aspects and extend our understanding of what is working/not working during interprofessional activities. Similarly, theories such as presage-process-product theory can guide planning, implementation and evaluation of IPC and IPE. Indeed, Fenwick, Nerland, and Jensen (2012) describe OST as a valuable resource that can support interprofessional initiatives.

Furthermore, a common practitioner critique of theory is that theory does not relate to the real world in which they operate. Within the sphere of healthcare, practice is becoming increasingly complex. Tsoukas (2017) argues that to capture the complexity of the real world, complex theories are required which use theoretical concepts to connect distinct aspects of lived experiences. Therefore, research informed by OST may capture experiences of those involved in IPC and IPE to a fuller degree than theories with an individual or group focus. This in turn may increase the impact and uptake of research findings in practice.

A limitation of this scoping review is that only English language studies were included which may have limited the results. Furthermore, the quality of conclusions drawn from a review are dependent on the quality and comprehensiveness of included studies (Boland, Levack, Perry, & Graham, 2017). Thompson et al. (2016) have noted that articles using theories may be missed during the searching phase, as theory names are not consistently included in medical subject headings (MeSH) index or article titles. Hand-searching of key journals and forward citation tracking of key articles in this review was utilised to mitigate for this. Also, CCAT scores indicate that the overall quality of studies included is relatively good, which enhances confidence in the conclusions drawn from the included studies.

Despite the limitations, an update on the use of OST within the field was a timely endeavour, as we identified 32 new studies using OST which were published from 2013-2019 and were not included in the review of Suter et al. (2013). Therefore, this update sheds light on relevant developments within the field over a six year period (Garner et al., 2016). Moreover, this review provides commentary on increased use of OST and potential benefits of OST use in interprofessional research, as well as recommendations for addressing challenges of applying OST in this field.

Conclusions

OST can provide a mechanism to better understand the complex dynamics at play during IPC and IPE. OST based on socio-cultural theory are the most commonly used OST in interprofessional research. Increased use of a diverse range of OST in interprofessional research should lead to IPC and IPE initiatives that are based on robust theoretical foundations and ultimately enhance healthcare practice.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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